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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

Tel: (314)298-8566

TestAmerica Job ID: 160-5697-1

Client Project/Site: Glen Isle, Radiological Analyses

For:

Posillico Dev Company at Harbor Isle LLC

1750 New Highway

Farmingdale, New York 11735

Attn: Ellis Koch

*Rhonda Ridenhower*

Authorized for release by:

3/14/2014 4:39:52 PM

Rhonda Ridenhower, Manager of Project Management

(314)298-8566

[rhonda.ridenhower@testamericainc.com](mailto:rhonda.ridenhower@testamericainc.com)

### LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Case Narrative

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

**Job ID: 160-5697-1**

**Laboratory: TestAmerica St. Louis**

Narrative

### CASE NARRATIVE

**Client: Posillico Dev Company at Harbor Isle LLC**

**Project: Glen Isle, Radiological Analyses**

**Report Number: 160-5697-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

#### RECEIPT

The samples were received on 02/26/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.1 C.

#### RADIUM 226 (0 DAY INGROWTH)

Sample FB029 (160-5697-5) was analyzed for radium 226 (0 day ingrowth) in accordance with EPA 903. The samples were prepared on 02/27/2014 and analyzed on 02/28/2014.

Radium 226 was analyzed without ingrowth, as such the results may be biased high.

No other difficulties were encountered during the Radium 226 analysis.

All other quality control parameters were within the acceptance limits.

#### RADIUM-228 (GFPC)

## Case Narrative

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

### Job ID: 160-5697-1 (Continued)

#### Laboratory: TestAmerica St. Louis (Continued)

Sample FB029 (160-5697-5) was analyzed for Radium-228 (GFPC) in accordance with EPA 904. The samples were prepared on 02/27/2014 and analyzed on 03/03/2014.

No difficulties were encountered during the Radium-228 analysis.

All quality control parameters were within the acceptance limits.

#### ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Solids

Samples LT-C-060-6-8 (160-5697-1), LT-G-028-8-10 (160-5697-2), LT-G-029-4-6 (160-5697-3) and DUP028 (160-5697-4) were analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE A01R\_Th. The samples were dried on 02/26/2014, prepared on 03/03/2014 and analyzed on 03/06/2014.

No difficulties were encountered during the Isotopic Thorium analysis.

All quality control parameters were within the acceptance limits.

#### ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Water

Sample FB029 (160-5697-5) was analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 03/03/2014 and analyzed on 03/05/2014.

No difficulties were encountered during the Isotopic Thorium analysis.

All quality control parameters were within the acceptance limits.

#### ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Solids

Samples LT-C-060-6-8 (160-5697-1), LT-G-028-8-10 (160-5697-2), LT-G-029-4-6 (160-5697-3) and DUP028 (160-5697-4) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were dried on 02/26/2014, prepared on 03/07/2014 and analyzed on 03/12/2014.

No difficulties were encountered during the Isotopic Uranium analysis.

All quality control parameters were within the acceptance limits.

#### ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Water

Sample FB029 (160-5697-5) was analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 03/03/2014 and analyzed on 03/05/2014.

No difficulties were encountered during the Isotopic Uranium analysis.

All quality control parameters were within the acceptance limits.

#### CESIUM-137 & OTHER GAMMA EMITTERS (GS)-Water

Sample FB029 (160-5697-5) was analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE. The samples were prepared on 02/27/2014 and analyzed on 02/28/2014.

The reporting limit was not met despite the activity being below the reporting limit. Protactinium-234 and protactinium-231 have an elevated MDC due to low abundance. The activity is not supported by thorium-234 or other members of the decay chain. The data is reported with the MDC achieved. (160-5691-1 DU), (MB 160-107877/1-A), FB026 (160-5691-1), FB029 (160-5697-5)

No other difficulties were encountered during the gamma spec analysis.

All other quality control parameters were within the acceptance limits.

#### RADIUM 226 (NO INGROWTH)-Solids

Samples LT-C-060-6-8 (160-5697-1), LT-G-028-8-10 (160-5697-2), LT-G-029-4-6 (160-5697-3) and DUP028 (160-5697-4) were analyzed

## Case Narrative

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

### Job ID: 160-5697-1 (Continued)

#### Laboratory: TestAmerica St. Louis (Continued)

for Radium 226 (No ingrowth) in accordance with GA-01-R. The samples were dried on 02/26/2014, prepared on 02/28/2014 and analyzed on 03/05/2014 and 03/07/2014.

The reporting limits for bismuth-212 and/or lead-210 analyzed by gamma spectroscopy were not met due to activity in the samples. The data is reported with the MDC achieved. (160-5692-1 DU), DUP028 (160-5697-4), LT-C-060-6-8 (160-5697-1), LT-G-028-8-10 (160-5697-2), LT-G-029-4-6 (160-5697-3), LT-XC-020-6-8 (160-5692-1)

The RER was outside of the acceptance limits of 1 for protactinium-231. Both the sample and duplicate activity were less than the MDC. (160-5692-1 DU), (LCS 160-107955/2-A), (MB 160-107955/1-A), DUP028 (160-5697-4), LT-C-060-6-8 (160-5697-1), LT-G-028-8-10 (160-5697-2), LT-G-029-4-6 (160-5697-3), LT-XC-020-6-8 (160-5692-1)

Ra-226 by gamma spectroscopy is typically determined by inference from daughters (e.g. Bi-214) after sealing the sample in an appropriate counting geometry/container and waiting 21 days to allow the Ra-226 decay chain through Rn-222 to reach secular equilibrium. Such an approach is considered to be the most reliable and representative means for establishing the true Ra-226 concentration in the sample. The method requested by the client to report Ra-226, using its own 186 keV gamma-ray emission, is subject to interference and potential bias due to the 185.7 keV U-235 gamma ray. Experience also indicates gamma spectroscopy software does not consistently assign accurate peak areas to Ra-226 (186 keV), with the problem compounded by slight drift of the instrumentation. The laboratory considers Ra-226 reported based upon the 186 keV gamma-ray emission to be best used by the client in a qualitative fashion.

No other difficulties were encountered during the Gamma spec analysis.

All other quality control parameters were within the acceptance limits.

# Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes  No 

THE LEADER IN ENVIRONMENTAL TESTING

**TestAmerica**

<b>Client:</b> Ellis Koch - RVR-Glen Isle Partners LLC <b>Project Manager:</b> Derek Ershick <b>Address:</b> 105 RVR-Plaza <b>Telephone Number (Area Code)/Fax Number:</b> (631) 589-6353 <b>City:</b> Uniondale <b>State:</b> NY <b>Zip Code:</b> 11566 <b>Carrier/Waybill Number:</b> Amity Rocanemo					Date	2/24/14	Chain of Custody/Number	263369
					Lab Number	41 or 3	Page	41 or 3
<b>Project Name and Location (State):</b> Glen Isle Waterfront Redevelopment <b>Contract/Purchase Order/Quote No.:</b> Dufosas					<i>Analysis (Attach list if more space is needed)</i>  Test Laboratory A-C Sample Serial # Date Collected Matrix Containers & Preservatives Lab Contact Carrier/Waybill Number Temperature on Receipt _____			
Sample I.D. No. and Description <small>(Containers for each sample may be combined on one line)</small>					Date	Time		
LT-C-060-0-2					2/24/14	0835		
LT-C-060-4-4					2/24/14	0840		
LT-C-060-8-10					2/24/14	0845		
LT-C-060-6-8					2/24/14	0850		
LT-G-028-0-2-15					2/24/14	0935		
LT-G-028-4-6					2/24/14	0940		
LT-G-028-8-10					2/24/14	0945		
LT-G-029-0-2					2/24/14	1000		
LT-G-029-2-4					2/24/14	1005		
LT-G-029-8-10					2/24/14	1010		
LT-G-029-4-6					2/24/14	1015		
Dufosas					2/24/14			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison A <input type="checkbox"/> Unknown <input type="checkbox"/> Poison B					Sample Disposal <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)			
Turn Around Time Required <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 7 Days <input type="checkbox"/> 14 Days <input type="checkbox"/> 21 Days <input type="checkbox"/> Other _____					QC Requirements (Specify) 1. Relinquished By: <i>A. Colomilli</i> Received By: <i>B. Clark</i> 2. Relinquished By: <i>B. Colomilli</i> Received By: <i>B. Clark</i> 3. Relinquished By: <i>B. Senni - T.A.</i> Received By: <i>J. Clark</i>			
					Date	2/25/14	Time	11:48
					Date	2/26/14	Time	0920
					Date	2/26/14	Time	09:00
					Date	2/26/14	Time	09:00
					Date	2/26/14	Time	09:00

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# Chain of Custody Record

# TestAmerica

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes  No

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client Address <u>625 RXB Plaza</u>	City <u>Uniondale</u>	State <u>NY</u>	Zip Code <u>11566</u>	Telephone Number (Area Code)/Fax Number <u>631-589-6353</u>	Project Manager <u>Derek Feswick</u>	Date <u>2/24/14</u>	Lab Number <u></u>	Chain of Custody Number <u>2633368</u>
Project Name and Location (State) <u>Glen Isle Waterfront Redevelopment</u>				Site Contact <u>Amber Dacar ielio</u>	Carrier/Waybill Number <u></u>	Page <u>52 of 3</u>	Analysis (Attach list if more space is needed)	
Special Instructions/ Conditions of Receipt								
<p><i>(ACX (8260))</i></p> <p><i>(H2S (6010))</i></p> <p><i>(1328 (8265))</i></p> <p><i>(SVC (8270))</i></p>								
Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix	Containers & Preservatives				
DUPO24	2/24/14	XXXX	Air	Upticks	Soil	Aggregates	Water	Preservatives
DUPD030	2/24/14	XXXX		X	X	X	X	HOEN ZnAc
LT-G-030-0-2	2/24/14	1045		X	X	X	X	NaOH
LT-G-030-4-4	2/24/14	1050		X	X	X	X	HCl
LT-G-030-6-8	2/24/14	1055		X	X	X	X	HNO3
LT-G-031-0-2	2/24/14	105		X	X	X	X	H2SO4
LT-G-031-4-4	2/24/14	1110		X	X	X	X	
LT-G-031-6-8	2/24/14	115		X	X	X	X	
LT-G-032-0-2	2/24/14	1140		X	X	X	X	
LT-G-032-4-6	2/24/14	1145		X	X	X	X	
LT-G-032-6-8-MSD	2/24/14	1150		X	X	X	X	
LT-G-033-0-2	2/24/14	1245		X	X	X	X	
Sample Disposal								
<input type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B	<input type="checkbox"/> Unknown	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For	Months (A fee may be assessed if samples are retained longer than 1 month)
<p><i>(ACX (8260))</i></p> <p><i>(H2S (6010))</i></p> <p><i>(1328 (8265))</i></p> <p><i>(SVC (8270))</i></p>								
QC Requirements (Specify)								
<p><i>(ACX (8260))</i></p> <p><i>(H2S (6010))</i></p> <p><i>(1328 (8265))</i></p> <p><i>(SVC (8270))</i></p>								
1. Relinquished By <u>Al Gacill</u>	Date <u>2/25/14</u>	Time <u>1:48</u>	1. Received By <u>D. Feswick</u>	Date <u>2/25/14</u>	Time <u>1:48</u>	2. Received By <u></u>	Date <u>2/25/14</u>	Time <u>1:48</u>
2. Relinquished By <u></u>	Date <u></u>	Time <u></u>	3. Received By <u>J. D. Dacar</u>	Date <u>2/25/14</u>	Time <u>14:00</u>	Comments <u>B. Sami - T.A.</u>	Date <u>2/26/14</u>	Time <u>0920</u>

Turn Around Time Required	24 Hours <input type="checkbox"/>	48 Hours <input type="checkbox"/>	7 Days <input type="checkbox"/>	14 Days <input type="checkbox"/>	21 Days <input type="checkbox"/>	Other <input type="checkbox"/>
1. Relinquished By <u>Al Gacill</u>	Date <u>2/25/14</u>	Time <u>1:48</u>	1. Received By <u>D. Feswick</u>	Date <u>2/25/14</u>	Time <u>1:48</u>	2. Received By <u></u>
2. Relinquished By <u></u>	Date <u></u>	Time <u></u>	3. Received By <u>J. D. Dacar</u>	Date <u>2/25/14</u>	Time <u>14:00</u>	Comments <u>B. Sami - T.A.</u>
Comments <u>3/14/2014</u>						

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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## Login Sample Receipt Checklist

Client: Posillico Dev Company at Harbor Isle LLC

Job Number: 160-5697-1

**Login Number:** 5697

**List Source:** TestAmerica St. Louis

**List Number:** 1

**Creator:** Clarke, Jill C

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Definitions/Glossary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

### Qualifiers

#### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Method Summary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
GA-01-R	Radium-226 & Other Gamma Emitters (GS)	DOE	TAL SL
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL

### Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

### Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

## Sample Summary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-5697-1	LT-C-060-6-8	Solid	02/24/14 08:50	02/26/14 09:20
160-5697-2	LT-G-028-8-10	Solid	02/24/14 09:45	02/26/14 09:20
160-5697-3	LT-G-029-4-6	Solid	02/24/14 10:15	02/26/14 09:20
160-5697-4	DUP028	Solid	02/24/14 00:00	02/26/14 09:20
160-5697-5	FB029	Water	02/24/14 12:15	02/26/14 09:20

# Client Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

**Client Sample ID: LT-C-060-6-8**

**Lab Sample ID: 160-5697-1**

Matrix: Solid

Date Collected: 02/24/14 08:50

Date Received: 02/26/14 09:20

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Thorium-228	0.388		0.145	0.149	1.00	0.109	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-230	0.273		0.116	0.119	1.00	0.0372	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-232	0.394		0.139	0.143	1.00	0.0370	pCi/g	03/03/14 10:32	03/06/14 16:45	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Thorium-229	79.6		30 - 110					03/03/14 10:32	03/06/14 16:45	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Uranium-233/234	0.581		0.160	0.167	1.00	0.0695	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-235/236	0.0351	U	0.0468	0.0469	1.00	0.0694	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-238	0.418		0.134	0.138	1.00	0.0322	pCi/g	03/07/14 13:26	03/12/14 18:01	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Uranium-232	86.7		30 - 110					03/07/14 13:26	03/12/14 18:01	1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.355		0.0238	0.0433	0.100	0.0227	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Bismuth-212	0.366		0.0855	0.0936	0.100	0.0784	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Bismuth-214	0.269		0.0159	0.0322	0.100	0.0129	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Lead-210	0.284		0.103	0.109	0.100	0.136	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Lead-212	0.310		0.0105	0.0415	0.100	0.0113	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Lead-214	0.309		0.0158	0.0358	0.100	0.0134	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Potassium-40	12.1		0.221	1.26	2.50	0.0741	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Protactinium-231	-0.101	U	0.102	0.103	1.00	0.168	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Radium-226	0.701		0.121	0.172	1.00	0.136	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Radium-228	0.355		0.0238	0.0433	1.00	0.0227	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Thorium-234	0.356		0.118	0.123	1.00	0.147	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Thallium-208	0.108		0.00773	0.0136	0.100	0.00664	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Uranium-235	0.0542		0.0226	0.0233	1.00	0.0304	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Uranium-238	0.356		0.118	0.123	1.00	0.147	pCi/g	02/28/14 09:56	03/05/14 02:59	1
Protactinium-234m	1.24		0.710	0.721	10.0	0.720	pCi/g	02/28/14 09:56	03/05/14 02:59	1

**Client Sample ID: LT-G-028-8-10**

**Lab Sample ID: 160-5697-2**

Matrix: Solid

Date Collected: 02/24/14 09:45

Date Received: 02/26/14 09:20

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Thorium-228	1.01		0.235	0.250	1.00	0.118	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-230	0.953		0.224	0.238	1.00	0.0682	pCi/g	03/03/14 10:32	03/06/14 16:45	1

TestAmerica St. Louis

# Client Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

**Client Sample ID: LT-G-028-8-10**

**Lab Sample ID: 160-5697-2**

**Matrix: Solid**

Date Collected: 02/24/14 09:45

Date Received: 02/26/14 09:20

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry) (Continued)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Thorium-232	0.805		0.206	0.217	1.00	0.0679	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	69.5		30 - 110					03/03/14 10:32	03/06/14 16:45	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Uranium-233/234	0.776		0.184	0.195	1.00	0.0725	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-235/236	0.0398		0.0459	0.0460	1.00	0.0398	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-238	0.720		0.177	0.187	1.00	0.0756	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.4		30 - 110					03/07/14 13:26	03/12/14 18:01	1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Actinium 228	1.39		0.0706	0.151	0.100	0.0629	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Bismuth-212	1.51		0.231	0.273	0.100	0.215	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Bismuth-214	1.04		0.0521	0.114	0.100	0.0389	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Lead-210	1.04		0.261	0.293	0.100	0.319	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Lead-212	1.41		0.0334	0.156	0.100	0.0292	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Lead-214	1.16		0.0408	0.119	0.100	0.0351	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Potassium-40	20.7		0.521	2.07	2.50	0.188	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Protactinium-231	-0.521	U	0.329	0.333	1.00	0.535	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Radium-226	2.61		0.324	0.480	1.00	0.350	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Radium-228	1.39		0.0706	0.151	1.00	0.0629	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Thorium-234	1.48		0.314	0.346	1.00	0.372	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Thallium-208	0.476		0.0279	0.0540	0.100	0.0214	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Uranium-235	0.109		0.0532	0.0543	1.00	0.0799	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Uranium-238	1.48		0.314	0.346	1.00	0.372	pCi/g	02/28/14 09:56	03/07/14 08:22	1
Protactinium-234m	3.24		2.18	2.20	10.0	2.19	pCi/g	02/28/14 09:56	03/07/14 08:22	1

**Client Sample ID: LT-G-029-4-6**

**Lab Sample ID: 160-5697-3**

**Matrix: Solid**

Date Collected: 02/24/14 10:15

Date Received: 02/26/14 09:20

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Thorium-228	0.705		0.196	0.204	1.00	0.121	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-230	0.810		0.203	0.214	1.00	0.0658	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-232	0.763		0.196	0.206	1.00	0.0378	pCi/g	03/03/14 10:32	03/06/14 16:45	1

TestAmerica St. Louis

# Client Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Client Sample ID: LT-G-029-4-6

Lab Sample ID: 160-5697-3

Matrix: Solid

Date Collected: 02/24/14 10:15

Date Received: 02/26/14 09:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Thorium-229	74.1		30 - 110	03/03/14 10:32	03/06/14 16:45	1

### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Uranium-233/234	0.407		0.129	0.134	1.00	0.0573	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-235/236	-0.00470	U	0.00664	0.00665	1.00	0.0651	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-238	0.507		0.144	0.150	1.00	0.0572	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.8		30 - 110					03/07/14 13:26	03/12/14 18:01	1

### Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Actinium 228	0.918		0.0406	0.102	0.100	0.0336	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Bismuth-212	1.01		0.148	0.182	0.100	0.125	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Bismuth-214	0.737		0.0255	0.0807	0.100	0.0183	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Lead-210	0.857		0.162	0.191	0.100	0.202	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Lead-212	0.927		0.0189	0.121	0.100	0.0183	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Lead-214	0.847		0.0225	0.0908	0.100	0.0205	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Potassium-40	13.1		0.274	1.37	2.50	0.110	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Protactinium-231	-0.239	U	0.168	0.170	1.00	0.274	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Radium-226	1.94		0.201	0.394	1.00	0.210	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Radium-228	0.918		0.0406	0.102	1.00	0.0336	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Thorium-234	0.959		0.180	0.206	1.00	0.221	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Thallium-208	0.296		0.0128	0.0333	0.100	0.00995	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Uranium-235	0.0595		0.0274	0.0281	1.00	0.0443	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Uranium-238	0.959		0.180	0.206	1.00	0.221	pCi/g	02/28/14 09:56	03/07/14 08:37	1
Protactinium-234m	1.21	U	0.771	0.781	10.0	1.24	pCi/g	02/28/14 09:56	03/07/14 08:37	1

## Client Sample ID: DUP028

Lab Sample ID: 160-5697-4

Matrix: Solid

Date Collected: 02/24/14 00:00

Date Received: 02/26/14 09:20

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			(2σ+/-)	(2σ+/-)						
Thorium-228	0.472		0.166	0.171	1.00	0.105	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-230	0.561		0.176	0.183	1.00	0.0628	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-232	0.576		0.178	0.184	1.00	0.0411	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	65.6		30 - 110					03/03/14 10:32	03/06/14 16:45	1

TestAmerica St. Louis

# Client Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

**Client Sample ID: DUP028**

**Lab Sample ID: 160-5697-4**

**Matrix: Solid**

Date Collected: 02/24/14 00:00

Date Received: 02/26/14 09:20

**Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Uranium-233/234	0.590		0.161	0.169	1.00	0.0786	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-235/236	0.0455	U	0.0537	0.0538	1.00	0.0753	pCi/g	03/07/14 13:26	03/12/14 18:01	1
Uranium-238	0.614		0.162	0.170	1.00	0.0483	pCi/g	03/07/14 13:26	03/12/14 18:01	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Uranium-232	87.7		30 - 110					03/07/14 13:26	03/12/14 18:01	1

**Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Actinium 228	0.296		0.0247	0.0391	0.100	0.0238	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Bismuth-212	0.302		0.0536	0.0621	0.100	0.0717	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Bismuth-214	0.274		0.0184	0.0339	0.100	0.0147	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Lead-210	0.326		0.105	0.112	0.100	0.133	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Lead-212	0.306		0.0108	0.0410	0.100	0.0109	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Lead-214	0.309		0.0153	0.0355	0.100	0.0132	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Potassium-40	7.90		0.219	0.837	2.50	0.0872	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Protactinium-231	0.157	U	0.0470	0.0500	1.00	0.194	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Radium-226	0.727		0.132	0.183	1.00	0.146	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Radium-228	0.296		0.0247	0.0391	1.00	0.0238	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Thorium-234	0.301		0.0510	0.0600	1.00	0.129	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Thallium-208	0.106		0.00900	0.0142	0.100	0.00760	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Uranium-235	0.0500		0.0267	0.0271	1.00	0.0344	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Uranium-238	0.301		0.0510	0.0600	1.00	0.129	pCi/g	02/28/14 09:56	03/05/14 09:14	1
Protactinium-234m	0.930		0.649	0.656	10.0	0.734	pCi/g	02/28/14 09:56	03/05/14 09:14	1

**Client Sample ID: FB029**

**Lab Sample ID: 160-5697-5**

**Matrix: Water**

Date Collected: 02/24/14 12:15

Date Received: 02/26/14 09:20

**Method: 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.136	U	0.129	0.129	1.00	0.197	pCi/L	02/27/14 12:46	02/28/14 14:25	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	85.8		40 - 110					02/27/14 12:46	02/28/14 14:25	1

**Method: 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.155	U	0.229	0.229	1.00	0.383	pCi/L	02/27/14 12:41	03/03/14 11:55	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	99.1		40 - 110					02/27/14 12:41	03/03/14 11:55	1
Y Carrier	87.6		40 - 110					02/27/14 12:41	03/03/14 11:55	1

TestAmerica St. Louis

# Client Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

**Client Sample ID: FB029**

**Lab Sample ID: 160-5697-5**

Date Collected: 02/24/14 12:15

Matrix: Water

Date Received: 02/26/14 09:20

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Thorium-228	0.0882	U	0.0929	0.0932	1.00	0.105	pCi/L	03/03/14 10:13	03/05/14 15:28	1
Thorium-230	0.128	U	0.115	0.116	1.00	0.132	pCi/L	03/03/14 10:13	03/05/14 15:28	1
Thorium-232	-0.0282	U	0.0221	0.0222	1.00	0.161	pCi/L	03/03/14 10:13	03/05/14 15:28	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Thorium-229	79.6		30 - 110					03/03/14 10:13	03/05/14 15:28	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Uranium-233/234	-0.0201	U	0.0180	0.0181	1.00	0.139	pCi/L	03/03/14 10:13	03/05/14 15:25	1
Uranium-235/236	-0.0100	U	0.0142	0.0142	1.00	0.139	pCi/L	03/03/14 10:13	03/05/14 15:25	1
<b>Uranium-238</b>	<b>0.0643</b>		0.0742	0.0744	1.00	0.0643	pCi/L	03/03/14 10:13	03/05/14 15:25	1
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Uranium-232	86.1		30 - 110					03/03/14 10:13	03/05/14 15:25	1

## Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Actinium-228	11.5	U	8.31	8.38	50.0	13.4	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Cesium-137	0.118	U	2.48	2.48	20.0	4.29	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Bismuth-212	30.4	U	29.7	29.8	50.0	48.1	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Bismuth-214	9.64	U	6.31	6.38	50.0	10.3	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Lead-212	1.35	U	4.90	4.90	50.0	7.85	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Lead-214	-3.34	U	9.97	9.97	50.0	11.3	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Potassium-40	44.6	U	42.8	43.0	75.0	71.3	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Protactinium-234m	221	UG	340	341	75.0	504	pCi/L	02/27/14 14:19	02/28/14 03:27	1
Protactinium-231	24.5	UG	52.1	52.2	75.0	103	pCi/L	02/27/14 14:19	02/28/14 03:27	1

TestAmerica St. Louis

# QC Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID:** MB 160-107868/1-A

**Matrix:** Water

**Analysis Batch:** 108004

**Client Sample ID:** Method Blank

**Prep Type:** Total/NA

**Prep Batch:** 107868

Analyte	MB MB		Uncert.	Count (2σ+/-)	Total (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Radium-226	0.1267	U		0.119	0.119	1.00	0.180	pCi/L	02/27/14 12:46	02/28/14 14:24	1
<b>Carrier</b>	<b>MB MB</b>								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	%Yield	Qualifier	Limits						02/27/14 12:46	02/28/14 14:24	1
	83.2		40 - 110								

**Lab Sample ID:** LCS 160-107868/2-A

**Matrix:** Water

**Analysis Batch:** 108004

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 107868

Analyte	Spike		LCS	LCS	Uncert. (2σ+/-)	Total	RL	MDC	Unit	%Rec	%Rec.Limits
	Added	Result		Qual							
Radium-226		11.2	10.52		1.21	1.21	1.00	0.177	pCi/L	94	68 - 137
<b>Carrier</b>	<b>LCS LCS</b>										
Ba Carrier	%Yield	Qualifier	Limits								
	90.0		40 - 110								

## Method: 904.0 - Radium-228 (GFPC)

**Lab Sample ID:** MB 160-107867/1-A

**Matrix:** Water

**Analysis Batch:** 108084

**Client Sample ID:** Method Blank

**Prep Type:** Total/NA

**Prep Batch:** 107867

Analyte	MB MB		Uncert.	Count (2σ+/-)	Total (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier									
Radium-228	0.02661	U		0.161	0.161	1.00	0.286	pCi/L	02/27/14 12:41	03/03/14 11:54	1
<b>Carrier</b>	<b>MB MB</b>								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	%Yield	Qualifier	Limits						02/27/14 12:41	03/03/14 11:54	1
Y Carrier	104		40 - 110						02/27/14 12:41	03/03/14 11:54	1
	86.3		40 - 110								

**Lab Sample ID:** LCS 160-107867/2-A

**Matrix:** Water

**Analysis Batch:** 108084

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 107867

Analyte	Spike		LCS	LCS	Uncert. (2σ+/-)	Total	RL	MDC	Unit	%Rec	%Rec.Limits
	Added	Result	Qual								
Radium-228		3.95	3.226		0.466	0.466	1.00	0.265	pCi/L	82	56 - 140
<b>Carrier</b>	<b>LCS LCS</b>										
Ba Carrier	%Yield	Qualifier	Limits								
	110		40 - 110								
Y Carrier	86.3		40 - 110								

TestAmerica St. Louis

# QC Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 160-5697-5 DU

Matrix: Water

Analysis Batch: 108083

Client Sample ID: FB029

Prep Type: Total/NA

Prep Batch: 107867

Analyte	Sample	Sample	DU	DU	Total		RL	MDC	Unit	RER	Limit
	Result	Qual	Result	Qual	Uncert.	(2σ+/-)					
Radium-228	0.155	U	0.4336		0.244		1.00	0.365	pCi/L	0.59	1
<b>Carrier</b>											
Ba Carrier	96.8				40 - 110						
Y Carrier	90.8				40 - 110						

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Lab Sample ID: MB 160-108019/1-A

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 108595

Prep Batch: 108019

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert.	Uncert.						
Thorium-228	-0.04209	U	0.235	0.235	1.00	0.574	pCi/L	03/03/14 10:13	03/05/14 15:28	1
Thorium-230	0.006558	U	0.117	0.117	1.00	0.341	pCi/L	03/03/14 10:13	03/05/14 15:28	1
Thorium-232	0.1606	U	0.214	0.215	1.00	0.339	pCi/L	03/03/14 10:13	03/05/14 15:28	1
<b>Tracer</b>										
Thorium-229	35.8		30 - 110					Prepared	Analyzed	Dil Fac
								03/03/14 10:13	03/05/14 15:28	1

Lab Sample ID: LCS 160-108019/2-A

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 108596

Prep Batch: 108019

Analyte	LCS	LCS	Spike	LCS	LCS	Uncert.	RL	MDC	Unit	%Rec.	Limits
	Added	Result	Added	Result	Qual	(2σ+/-)					
Thorium-230			8.64	9.725		1.25	1.00	0.154	pCi/L	113	81 - 125
<b>Tracer</b>											
Thorium-229	81.9		30 - 110								

Lab Sample ID: LCSD 160-108019/3-A

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 108599

Prep Batch: 108019

Analyte	LCSD	LCSD	Spike	LCSD	LCSD	Uncert.	RL	MDC	Unit	%Rec.	Limits	RER
	Added	Result	Added	Result	Qual	(2σ+/-)						
Thorium-230			8.64	9.623		1.25	1.00	0.124	pCi/L	111	81 - 125	0.04
<b>Tracer</b>												
Thorium-229	78.8		30 - 110									

TestAmerica St. Louis

# QC Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry) (Continued)

**Lab Sample ID:** MB 160-108024/1-A

**Matrix:** Solid

**Analysis Batch:** 109030

**Client Sample ID:** Method Blank

**Prep Type:** Total/NA

**Prep Batch:** 108024

Analyte	Result	MB MB		Count (2σ+/-)	Total (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		MB	MB	Uncert.	Uncert.						
Thorium-228	0.03541	U		0.0508	0.0508	1.00	0.0860	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-230	0.009356	U		0.0215	0.0215	1.00	0.0455	pCi/g	03/03/14 10:32	03/06/14 16:45	1
Thorium-232	0.00000	U		0.00373	0.00373	1.00	0.0298	pCi/g	03/03/14 10:32	03/06/14 16:45	1
<b>Tracer</b>		<b>MB</b>	<b>MB</b>								
<i>Thorium-229</i>	<i>91.8</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
				30 - 110					03/03/14 10:32	03/06/14 16:45	1

**Lab Sample ID:** LCS 160-108024/2-A

**Matrix:** Solid

**Analysis Batch:** 109031

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 108024

Analyte	Added	Spike		LCS Result	LCS Qual	Total		RL	MDC	Unit	%Rec.
		Spike	Added			Uncert. (2σ+/-)	Total (2σ+/-)				
Thorium-230	24.5			24.54		2.53	1.00		0.114	pCi/g	100
<b>Tracer</b>		<b>LCS</b>	<b>LCS</b>								
<i>Thorium-229</i>	<i>82.8</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>							
				30 - 110							

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Lab Sample ID:** MB 160-108021/1-A

**Matrix:** Water

**Analysis Batch:** 108605

**Client Sample ID:** Method Blank

**Prep Type:** Total/NA

**Prep Batch:** 108021

Analyte	Result	MB MB		Count (2σ+/-)	Total (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		MB	MB	Uncert.	Uncert.						
Uranium-233/234	0.07756	U		0.102	0.102	1.00	0.164	pCi/L	03/03/14 10:13	03/05/14 15:25	1
Uranium-235/236	-0.005170	U		0.0103	0.0103	1.00	0.126	pCi/L	03/03/14 10:13	03/05/14 15:25	1
Uranium-238	0.009675	U		0.0465	0.0465	1.00	0.126	pCi/L	03/03/14 10:13	03/05/14 15:25	1
<b>Tracer</b>		<b>MB</b>	<b>MB</b>								
<i>Uranium-232</i>	<i>83.1</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
				30 - 110					03/03/14 10:13	03/05/14 15:25	1

**Lab Sample ID:** LCS 160-108021/2-A

**Matrix:** Water

**Analysis Batch:** 108607

**Client Sample ID:** Lab Control Sample

**Prep Type:** Total/NA

**Prep Batch:** 108021

Analyte	Added	Spike		LCS Result	LCS Qual	Total		RL	MDC	Unit	%Rec.
		Spike	Added			Uncert. (2σ+/-)	Total (2σ+/-)				
Uranium-233/23	12.7			12.79		1.50	1.00		0.138	pCi/L	100
4											
Uranium-238	13.0			13.69		1.58	1.00		0.111	pCi/L	105
<b>Tracer</b>		<b>LCS</b>	<b>LCS</b>								
<i>Uranium-232</i>	<i>86.9</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>							
				30 - 110							

TestAmerica St. Louis

# QC Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCSD 160-108021/3-A								Client Sample ID: Lab Control Sample Dup						
Matrix: Water								Prep Type: Total/NA						
Analysis Batch: 108608								Prep Batch: 108021						
Analyte		Spike	LCSD	LCSD	Total			%Rec.					RER	
		Added	Result	Qual	Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER		Limit	
Uranium-233/23		12.7	11.43		1.36	1.00	0.175	pCi/L	90	84 - 120	0.47		1	
4														
Uranium-238		13.0	11.72		1.39	1.00	0.106	pCi/L	90	83 - 121	0.67		1	
<i>Tracer</i>		LCSD	LCSD											
		%Yield	Qualifier		Limits									
Uranium-232		92.1			30 - 110									

Lab Sample ID: MB 160-109197/1-A								Client Sample ID: Method Blank						
Matrix: Solid								Prep Type: Total/NA						
Analysis Batch: 110045								Prep Batch: 109197						
Analyte		MB	MB		Count	Total								
		Result	MB	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed		Dil Fac	
Uranium-233/234		0.02636	U		0.0352	0.0353	1.00	0.0522	pCi/g	03/07/14 13:26	03/12/14 18:01		1	
Uranium-235/236		-0.002343	U		0.00469	0.00469	1.00	0.0569	pCi/g	03/07/14 13:26	03/12/14 18:01		1	
Uranium-238		0.01816	U		0.0286	0.0286	1.00	0.0456	pCi/g	03/07/14 13:26	03/12/14 18:01		1	
<i>Tracer</i>		MB	MB							Prepared	Analyzed		Dil Fac	
		%Yield	Qualifier		Limits					03/07/14 13:26	03/12/14 18:01			
Uranium-232		93.7			30 - 110									1

Lab Sample ID: LCS 160-109197/2-A								Client Sample ID: Lab Control Sample						
Matrix: Solid								Prep Type: Total/NA						
Analysis Batch: 110046								Prep Batch: 109197						
Analyte		Spike	LCs	LCs	Total			%Rec.						
		Added	Result	Qual	Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits				
Uranium-233/23		6.37	6.397		0.745	1.00	0.0474	pCi/g	100	84 - 120				
4														
Uranium-238		6.51	6.500		0.754	1.00	0.0312	pCi/g	100	82 - 122				
<i>Tracer</i>		LCs	LCs											
		%Yield	Qualifier		Limits									
Uranium-232		90.3			30 - 110									

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)														
Lab Sample ID: MB 160-107877/1-A								Client Sample ID: Method Blank						
Matrix: Water								Prep Type: Total/NA						
Analysis Batch: 107940								Prep Batch: 107877						
Analyte		MB	MB		Count	Total								
		Result	MB	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed		Dil Fac	
Actinium-228		9.046	U		6.90	6.96	50.0	11.2	pCi/L	02/27/14 14:19	02/28/14 03:23		1	
Cesium-137		1.815	U		2.12	2.12	20.0	3.47	pCi/L	02/27/14 14:19	02/28/14 03:23		1	
Bismuth-212		0.0000	U		12.0	12.0	50.0	43.0	pCi/L	02/27/14 14:19	02/28/14 03:23		1	
Bismuth-214		2.846	U		7.67	7.67	50.0	10.3	pCi/L	02/27/14 14:19	02/28/14 03:23		1	
Lead-212		-1.979	U		4.74	4.75	50.0	7.23	pCi/L	02/27/14 14:19	02/28/14 03:23		1	

TestAmerica St. Louis

# QC Sample Results

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: MB 160-107877/1-A**

**Matrix: Water**

**Analysis Batch: 107940**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 107877**

Analyte	Result	MB	MB	Count		Total		Prepared	Analyzed	Dil Fac
				Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	
Lead-214	-1.771	U			7.48	7.48	50.0	9.05	pCi/L	02/27/14 14:19
Potassium-40	-51.20	U			85.8	86.0	75.0	61.2	pCi/L	02/27/14 14:19
Protactinium-234m	45.00	U G			266	266	75.0	486	pCi/L	02/27/14 14:19
Protactinium-231	8.099	U G			32.7	32.7	75.0	110	pCi/L	02/27/14 14:19
										02/28/14 03:23

**Lab Sample ID: LCS 160-107877/2-A**

**Matrix: Water**

**Analysis Batch: 108323**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 107877**

Analyte	Spike Added	LCS Result	LCS Qual	Total				%Rec.	Limits
				Uncert. (2σ+/-)	RL	MDC	Unit		
Americium-241	137000	133600		15400		238	pCi/L	97	90 - 111
Cesium-137	50300	49510		4950	20.0	92.1	pCi/L	98	90 - 111
Cobalt-60	58700	57680		5700		56.5	pCi/L	98	89 - 110

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-107955/1-A**

**Matrix: Solid**

**Analysis Batch: 108306**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 107955**

Analyte	Result	MB	MB	Count		Total		Prepared	Analyzed	Dil Fac
				Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	
Actinium 228	0.009706	U			0.00809	0.00815	0.100	0.0166	pCi/g	02/28/14 09:56
Bismuth-212	0.01583	U			0.0299	0.0299	0.100	0.0505	pCi/g	02/28/14 09:56
Bismuth-214	0.003687	U			0.00341	0.00343	0.100	0.0113	pCi/g	02/28/14 09:56
Lead-210	0.03886	U			0.0558	0.0560	0.100	0.0865	pCi/g	02/28/14 09:56
Lead-212	0.002962	U			0.00523	0.00524	0.100	0.00703	pCi/g	02/28/14 09:56
Lead-214	0.005871	U			0.00491	0.00495	0.100	0.00780	pCi/g	02/28/14 09:56
Potassium-40	0.0000	U			0.0416	0.0433	2.50	0.0805	pCi/g	02/28/14 09:56
Protactinium-231	0.01801	U			0.0590	0.0590	1.00	0.100	pCi/g	02/28/14 09:56
Radium-226	-0.005560	U			0.0530	0.0530	1.00	0.0812	pCi/g	02/28/14 09:56
Radium-228	0.009706	U			0.00809	0.00815	1.00	0.0166	pCi/g	02/28/14 09:56
Thorium-234	0.03113	U			0.0495	0.0496	1.00	0.0779	pCi/g	02/28/14 09:56
Thallium-208	0.003029	U			0.00296	0.00298	0.100	0.00480	pCi/g	02/28/14 09:56
Uranium-235	0.01139	U			0.0113	0.0113	1.00	0.0177	pCi/g	02/28/14 09:56
Uranium-238	0.03113	U			0.0495	0.0496	1.00	0.0779	pCi/g	02/28/14 09:56
Protactinium-234m	-0.1300	U			0.360	0.360	10.0	0.764	pCi/g	02/28/14 09:56
										03/04/14 03:09

**Lab Sample ID: LCS 160-107955/2-A**

**Matrix: Solid**

**Analysis Batch: 108306**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 107955**

Analyte	Spike Added	LCS Result	LCS Qual	Total				%Rec.	Limits
				Uncert. (2σ+/-)	RL	MDC	Unit		
Americium-241	101	102.2		10.6		0.186	pCi/g	101	87 - 116
Cesium-137	35.7	35.59		3.71	0.100	0.0700	pCi/g	100	87 - 120
Cobalt-60	41.7	41.32		4.15		0.0413	pCi/g	99	87 - 115

TestAmerica St. Louis

# QC Association Summary

Client: Posillico Dev Company at Harbor Isle LLC  
 Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Rad

### Leach Batch: 107601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-1	LT-C-060-6-8	Total/NA	Solid	Dry and Grind	
160-5697-2	LT-G-028-8-10	Total/NA	Solid	Dry and Grind	
160-5697-3	LT-G-029-4-6	Total/NA	Solid	Dry and Grind	
160-5697-4	DUP028	Total/NA	Solid	Dry and Grind	

### Prep Batch: 107867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-5	FB029	Total/NA	Water	PrecSep_0	
160-5697-5 DU	FB029	Total/NA	Water	PrecSep_0	
LCS 160-107867/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-107867/1-A	Method Blank	Total/NA	Water	PrecSep_0	

### Prep Batch: 107868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-5	FB029	Total/NA	Water	PrecSep_0	
LCS 160-107868/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-107868/1-A	Method Blank	Total/NA	Water	PrecSep_0	

### Prep Batch: 107877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-5	FB029	Total/NA	Water	Fill_Geo-0	
LCS 160-107877/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-107877/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 107955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-1	LT-C-060-6-8	Total/NA	Solid	Fill_Geo-0	107601
160-5697-2	LT-G-028-8-10	Total/NA	Solid	Fill_Geo-0	107601
160-5697-3	LT-G-029-4-6	Total/NA	Solid	Fill_Geo-0	107601
160-5697-4	DUP028	Total/NA	Solid	Fill_Geo-0	107601
LCS 160-107955/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
MB 160-107955/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	

### Prep Batch: 108019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-5	FB029	Total/NA	Water	ExtChrom	
LCS 160-108019/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-108019/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	
MB 160-108019/1-A	Method Blank	Total/NA	Water	ExtChrom	

### Prep Batch: 108021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-5	FB029	Total/NA	Water	ExtChrom	
LCS 160-108021/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-108021/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	
MB 160-108021/1-A	Method Blank	Total/NA	Water	ExtChrom	

### Prep Batch: 108024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-1	LT-C-060-6-8	Total/NA	Solid	ExtChrom	107601
160-5697-2	LT-G-028-8-10	Total/NA	Solid	ExtChrom	107601

TestAmerica St. Louis

# QC Association Summary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Rad (Continued)

### Prep Batch: 108024 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-3	LT-G-029-4-6	Total/NA	Solid	ExtChrom	107601
160-5697-4	DUP028	Total/NA	Solid	ExtChrom	107601
LCS 160-108024/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
MB 160-108024/1-A	Method Blank	Total/NA	Solid	ExtChrom	

### Prep Batch: 109197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-5697-1	LT-C-060-6-8	Total/NA	Solid	ExtChrom	107601
160-5697-2	LT-G-028-8-10	Total/NA	Solid	ExtChrom	107601
160-5697-3	LT-G-029-4-6	Total/NA	Solid	ExtChrom	107601
160-5697-4	DUP028	Total/NA	Solid	ExtChrom	107601
LCS 160-109197/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
MB 160-109197/1-A	Method Blank	Total/NA	Solid	ExtChrom	

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# Tracer/Carrier Summary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (40-110)	
160-5697-5	FB029	85.8	
LCS 160-107868/2-A	Lab Control Sample	90.0	
MB 160-107868/1-A	Method Blank	83.2	

**Tracer/Carrier Legend**  
Ba = Ba Carrier

## Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (40-110)	Y (40-110)
160-5697-5	FB029	99.1	87.6
160-5697-5 DU	FB029	96.8	90.8
LCS 160-107867/2-A	Lab Control Sample	110	86.3
MB 160-107867/1-A	Method Blank	104	86.3

**Tracer/Carrier Legend**  
Ba = Ba Carrier  
Y = Y Carrier

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Th-229 (30-110)	
160-5697-1	LT-C-060-6-8	79.6	
160-5697-2	LT-G-028-8-10	69.5	
160-5697-3	LT-G-029-4-6	74.1	
160-5697-4	DUP028	65.6	
LCS 160-108024/2-A	Lab Control Sample	82.8	
MB 160-108024/1-A	Method Blank	91.8	

**Tracer/Carrier Legend**  
Th-229 = Thorium-229

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Th-229 (30-110)	
160-5697-5	FB029	79.6	
LCS 160-108019/2-A	Lab Control Sample	81.9	
LCSD 160-108019/3-A	Lab Control Sample Dup	78.8	
MB 160-108019/1-A	Method Blank	35.8	

**Tracer/Carrier Legend**  
Th-229 = Thorium-229

TestAmerica St. Louis

## Tracer/Carrier Summary

Client: Posillico Dev Company at Harbor Isle LLC  
Project/Site: Glen Isle, Radiological Analyses

TestAmerica Job ID: 160-5697-1

### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	U-232 (30-110)	Percent Yield (Acceptance Limits)					
160-5697-1	LT-C-060-6-8	86.7						
160-5697-2	LT-G-028-8-10	86.4						
160-5697-3	LT-G-029-4-6	91.8						
160-5697-4	DUP028	87.7						
LCS 160-109197/2-A	Lab Control Sample	90.3						
MB 160-109197/1-A	Method Blank	93.7						

Tracer/Carrier Legend

U-232 = Uranium-232

### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	U-232 (30-110)	Percent Yield (Acceptance Limits)					
160-5697-5	FB029	86.1						
LCS 160-108021/2-A	Lab Control Sample	86.9						
LCSD 160-108021/3-A	Lab Control Sample Dup	92.1						
MB 160-108021/1-A	Method Blank	83.1						

Tracer/Carrier Legend

U-232 = Uranium-232

TestAmerica St. Louis